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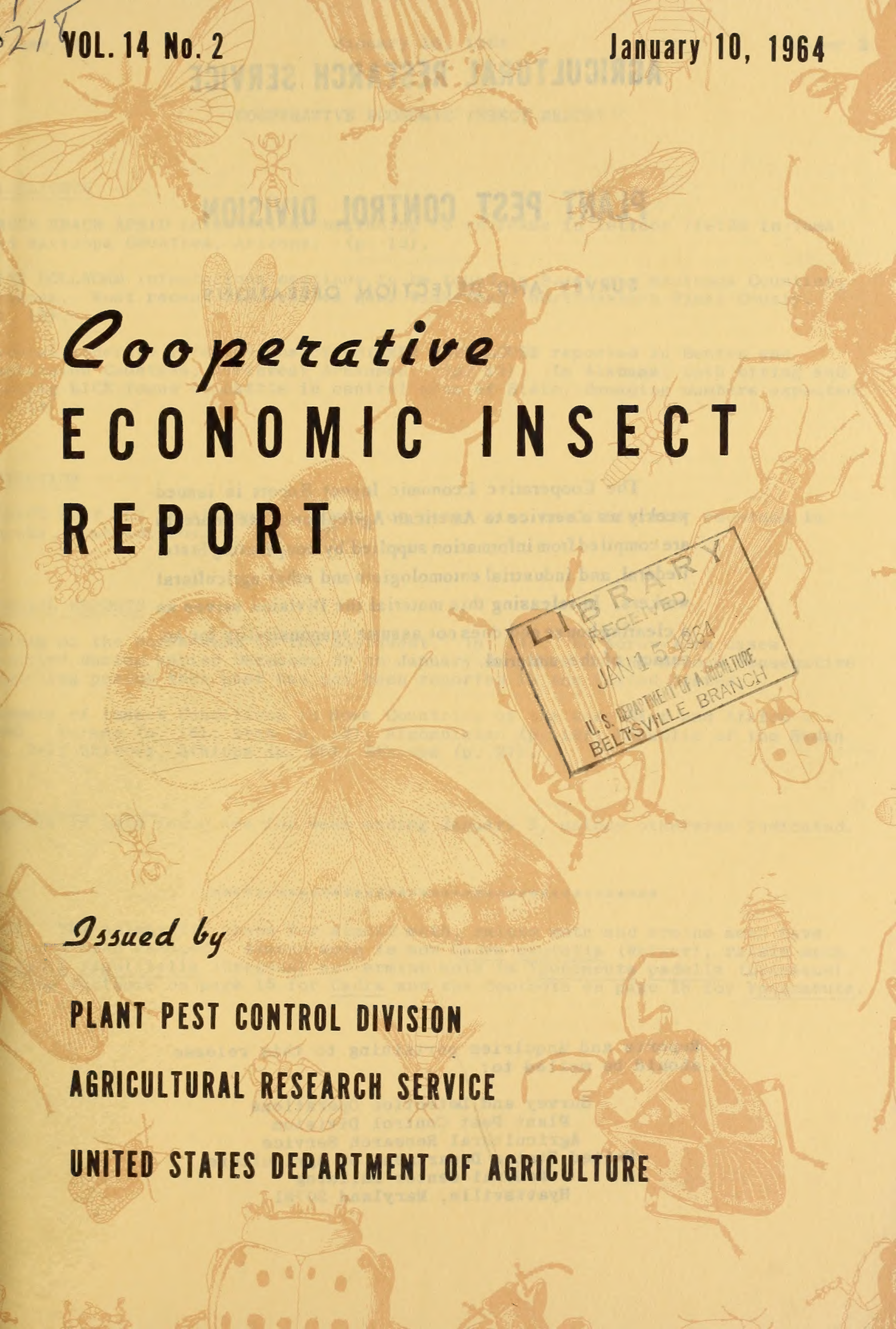

VOL. 14 No. 2 January 10, 1964

Cooperative
ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION

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UNITED STATES DEPARTMENT OF AGRICULTURE

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PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
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Hyattsville, Maryland 20781

Volume 14 January 10, 1964 Number 2

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

GREEN PEACH APHID infestations beginning to increase in lettuce fields in Yuma and Maricopa Counties, Arizona. (p. 12).

PINK BOLLWORM infestations continue to be found in Pinal and Maricopa Counties, Arizona. Most recent discoveries near Winkelman, northeastern Pinal County. (p. 13).

Several moderate infestations of CHICKEN BODY LOUSE reported in Benton and Washington Counties, northwest Arkansas. (p. 13). In Alabama, both biting and sucking LICE found on cattle in central area of State; damaging numbers expected. (p. 14).

DETECTION

CARROT RUST FLY (Psila rosae) found for first time in California; recorded in Eureka, Humboldt County. (p. 12).

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 14). No screw-worm cases reported during period December 29 to January 4. This is the second consecutive reporting period that pest has not been reported in the United States.

Summary of Insect Conditions in Some Countries of the Near East and Africa - 1963. Turkey (p. 16); Iran (p. 18); Afghanistan (p. 19); Republic of the Sudan (p. 21); Eritrea, Ethiopa (p. 25); Ethiopa (p. 27).

Reports in this issue are for week ending January 3, unless otherwise indicated.

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NOTE: The scientific names for almond moth, raisin moth and ermine moth have recently been changed. Almond moth is now Cadra cautella (Walker), raisin moth is Cadra figulilella (Gregson) and ermine moth is Yponomeuta padella (Linnaeus). See the footnote on page 15 for Cadra and the footnote on page 18 for Yponomeuta.

WEATHER OF THE WEEK ENDING JANUARY 6

Temperatures averaged above normal over most of the area northwest of a line from western Texas northeastward to northern Lower Michigan and below normal southeast of that line. Temperature departures ranged from +20° over northeastern Montana and northwestern North Dakota to -9° at Tallahassee, Florida. Over some eastern areas, it was the 4th consecutive week with below-normal temperatures. In Florida, it was the 5th colder-than-normal week.

Generous rains fell along the Washington and Oregon coast. Weekly totals decreased from about 4 inches on the coast to about 1 inch a short distance inland. Most other areas from the Pacific eastward to the Mississippi and Ohio Rivers received less than 1/4 inch. Precipitation exceeded 1 inch over the southern Appalachians and over an area extending from Mobile, Alabama, to Norfolk, Virginia. The eastern coast of southern Florida also received generous rains. Some stations in that area received from 3 to 6 inches on December 30 and 31.

The heaviest snowfall of the century fell over parts of the Gulf States at midweek. New Orleans, Louisiana, received 4 inches of snow and 10.5 inches fell at Bay St. Louis, Mississippi. Snow, sleet, and freezing rain caused extensive damage to power and communication lines and trees from Georgia to North Carolina.

At the beginning of the week, light rain fell and winds increased in the Far Northwest and a weak low in the eastern part of the Gulf of Mexico brought moderate to heavy showers to southern Florida. Unseasonal warmth prevailed in southern California in contrast to bitter cold from Minnesota to New England. The storm in the Southeast intensified producing generous rains along the Gulf of Mexico with heavy snow over parts of the Gulf States on Tuesday. By the beginning of the New Year, heavy snow clogged the highways of many southeastern States. East-central Mississippi and northern Alabama were especially hard hit. Snow accumulated to 14 inches at Meridian, Mississippi, and to 16 inches at Huntsville, Alabama.

Southwesterly winds brought a warming trend to the middle States at midweek. The temperature at Springfield, Missouri, climbed from 8° on Wednesday morning to 68° by Thursday afternoon. Strong winds whistled through this section on Friday as a dry cold front moved eastward. Freezing temperatures occurred as far south as Tampa, Florida, Friday morning. Light snow flurries occurred on Saturday over the northern Rocky Mountains and from the upper Ohio River Valley to New England.

At the end of the week, high pressure prevailed from the Great Basin to the central Great Plains. Another mound of high pressure was centered along the middle Atlantic coast. A low pressure area, centered near Green Bay, Wisconsin, produced snow flurries in Minnesota, Wisconsin, and Upper Michigan. It was cloudy along a cold front that extended southwestward to Ft. Worth, Texas, and beyond. Another storm, off the coast of Washington, was bringing rain to the lower coastal lands and snow flurries to the northern Rocky Mountains. (Summary supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Moderate counts reported on alfalfa in Choctaw County (southeast). (Okla. Coop. Sur.). ARKANSAS - Temperatures as low as -13° F. apparently knocked out infestations in northwestern area. Dead aphids found on alfalfa but no live specimens. (Ark. Ins. Sur.). FLORIDA - Nymphs and adults light on Hairy Peruvian alfalfa at Gainesville, Alachua County. (Mead).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Populations remain light in Curry and Roosevelt Counties in wheat. (N. M. Coop. Rpt.). OKLAHOMA - Populations in east central and south central counties remain below economic levels, with all counts fewer than 5 per linear foot. (Okla. Coop. Sur.). ARKANSAS - Surveys negative in northwestern area. (Ark. Ins. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Very light populations beginning to appear in Yuma and Maricopa Counties on alfalfa. Counts averaged 2-10 per 100 sweeps. (Ariz. Coop. Sur.). ARKANSAS - Surveys negative in northwestern area. (Ark. Ins. Sur.). FLORIDA - Nymphs and adults light on Hairy Peruvian alfalfa at Gainesville, Alachua County. (Mead).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Light counts noted in Jefferson County wheat (south central). (Okla. Coop. Sur.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Light counts of 6 per linear foot noted in Jefferson County (south central); none observed in east central counties. (Okla. Coop. Sur.).

MELON APHID (Aphis gossypii) - ARIZONA - One field of alfalfa infested in Yuma County. Counts averaged 10 per 100 sweeps. (Ariz. Coop. Sur.).

APHIDS - UTAH - Wild geranium in Logan Canyon, Cache County, conspicuously infested with Macrosiphum crenicornum and Macrosiphum aetheocornum during June and July. (Knowlton, Eastop).

A PLANT BUG (Taylorilygus pallidulus) - FLORIDA - Two adults collected in 300 sweeps on foot-high Hairy Peruvian alfalfa at Gainesville, Alachua County. (Mead).

LYGUS BUGS (Lygus spp.) - ARIZONA - Adults averaged 3 per 100 sweeps in alfalfa fields of Yuma County; ranged 7-8 per 100 sweeps in Maricopa County. (Ariz. Coop. Sur.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Adults averaged 4 per 100 sweeps in Yuma County alfalfa fields and 8-10 per 100 sweeps in Maricopa County. (Ariz. Coop. Sur.).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - FLORIDA - Four adults collected in 300 sweeps on foot-high Hairy Peruvian alfalfa at Gainesville, Alachua County. (Mead).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Sweepings in alfalfa fields averaged 2 larvae per 100 sweeps in Yuma County and 8 per 100 sweeps in Maricopa County. Increases were noted in adult flights. (Ariz. Coop. Sur.).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - FLORIDA - Two adults collected in 300 sweeps in foot-high Hairy Peruvian alfalfa at Gainesville, Alachua County. (Mead).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Adults averaged 1-2 per 100 sweeps in alfalfa fields on the Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

FRUIT INSECTS

CITRUS MEALYBUG (*Pseudococcus citri*) - CALIFORNIA - Heavy locally on orange trees in Chula Vista, San Diego County. (Cal. Coop. Rpt.).

CITRUS RED MITE (*Panonychus citri*) - FLORIDA - Moderate to severe and damaging Meyer lemon at Gainesville, Alachua County. (Mead, Dec. 24).

CITRUS RUST MITE (*Phyllocoptruta oleivora*) - ARIZONA - Numerous groves found containing feeding damage in Yuma County. (Ariz. Coop. Sur.).

A LEAF ROLLER MOTH (*Platynota stultana*) - ARIZONA - Larvae continue to be found in citrus groves and nurseries in Maricopa and Yuma Counties. (Ariz. Coop. Sur.).

SPIREA APHID (*Aphis spiraecola*) - FLORIDA - Lightly damaging satsuma at De Leon Springs, Volusia County. (Roberts).

HICKORY SHUCKWORM (*Laspeyresia caryana*) - ALABAMA - Recent survey of poorly kept pecan orchard in Lee County shows average larval infestation of 8.3 percent of nuts. Orchard 30 to 35 years old. Individual trees varied 4-18 percent infested, with 140-245 larvae per tree, or a high of nearly 4,000 emerged larvae per acre. No effort to maintain production for past 10-15 years. (Buttram et al.).

PECAN WEEVIL (*Curculio caryae*) - NORTH CAROLINA - Damaged 90 percent of Stuart pecans from several trees at location in Columbus County; 2-40 nuts examined still contained full-grown larvae. (Raper, Mount).

SAN JOSE SCALE (*Aspidiotus perniciosus*) - CALIFORNIA - Medium on almond nursery stock in Brentwood, Contra Costa County. (Cal. Coop. Rpt.).

OMNIVOROUS LOOPER (*Sabulodes caberata*) - CALIFORNIA - Larvae light locally on peach leaves in Santa Cruz, Santa Cruz County. (Cal. Coop. Rpt.).

WESTERN PEACH TREE BORER (*Sanninoidea exitiosa graefi*) - CALIFORNIA - Light on plum on Mariana root stock nursery trees in Brentwood, Contra Costa County. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

CARROT RUST FLY (*Psila rosae*) - CALIFORNIA - Maggots infested carrots in local vegetable garden at Eureka, Humboldt County, December 21. Det. by M. S. Wasbauer. This is a new State record. (Cal. Coop. Rpt.).

FALL ARMYWORM (*Laphygma frugiperda*) - ARIZONA - Scattered infestations found in sugar beet and lettuce fields of Maricopa County. (Ariz. Coop. Sur.).

BEET ARMYWORM (*Spodoptera exigua*) - ARIZONA - Light infestations exist in sugar beet fields of Maricopa County; averaged 4 larvae per 100 sweeps. (Ariz. Coop. Sur.).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Infestations beginning to increase in lettuce fields of Yuma and Maricopa Counties; populations in sugar beets in Mesa area, Maricopa County, average 15-20 per 100 sweeps. Twelve sticky board traps averaged 0.17 per trap in Yuma County. (Ariz. Coop. Sur.). FLORIDA - Severely damaged collard greens at Key West, Monroe County. (Buchanan, Dec. 24).

MELON APHID (*Aphis gossypii*) - ARIZONA - Averaged 1.3 per trap on 12 sticky boards in Yuma County. (Ariz. Coop. Sur.).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Infestations continue to be found in Pinal and Maricopa Counties. Most recent discoveries near Winkelman, northeastern Pinal County. (Ariz. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Heavy locally on privet in Sacramento, Sacramento County. Light on scarlet wisteria tree stock in Oroville, Butte County. (Cal. Coop. Rpt.).

LONG-TAILED MEALYBUG (Pseudococcus adonidum) - CALIFORNIA - Medium on New Zealand flax (Phormium tenax) nursery stock in Menlo Park, San Mateo County. (Cal. Coop. Rpt.).

MEXICAN MEALYBUG (Phenacoccus gossypii) - CALIFORNIA - Light to medium on lantana plants in Manteca, San Joaquin County, and Tulare, Tulare County; light in El Centro, Imperial County. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - CALIFORNIA - Adults heavy on deodar cedar leaves in ornamental plantings in Lodi, San Joaquin County. (Cal. Coop. Rpt.).

APHIDS - CALIFORNIA - Pterocomma bicolor light on pussy willow trees in San Jose, Santa Clara County. Adults and nymphs present. (Cal. Coop. Rpt.). OKLAHOMA - First seasonal activity of Cinara tujafilina noted December 17 on arborvitae in Marshall County. (Okla. Coop. Sur.).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - FLORIDA - Taken on Codiaeum sp. at Apopka, Orange County. (Musgrove, Nov. 15). CALIFORNIA - Adults light on lantana in Arlington, Riverside County. (Cal. Coop. Rpt.).

SPIDER MITES - NEW MEXICO - Problem in variety store displays of house plants in many areas of State. Control difficulty noted. (N. M. Coop. Rpt.).

A FALSE SPIDER MITE (Brevipalpus sp.) - FLORIDA - Moderately to severely damaging hurricane palm at Largo, Pinellas County. (Bingaman, Oct. 25).

INSECTS AFFECTING MAN AND ANIMALS

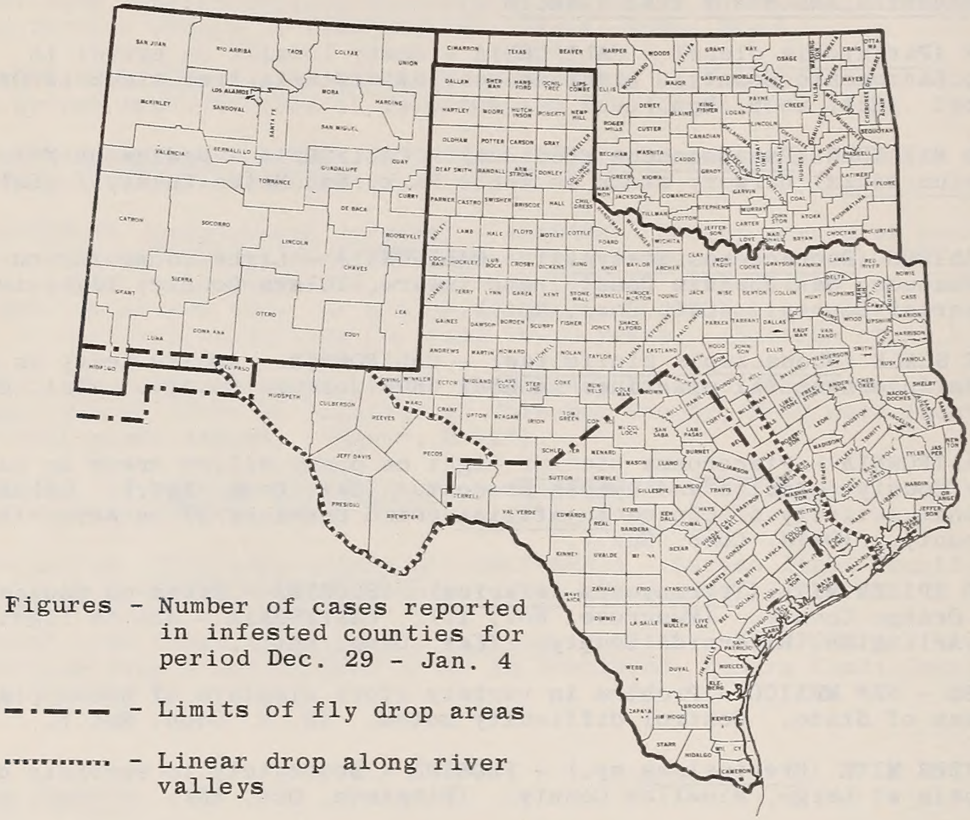
CATTLE GRUBS (Hypoderma spp.) - NEW MEXICO - Ranchers in Sierra, Grant, Dona Ana, De Baca and Harding Counties report light to fairly heavy numbers of H. lineatum larvae appearing in backs of range cattle. (N. M. Coop. Rpt.). OKLAHOMA - H. lineatum moderate on cattle checked in Love County. (Okla. Coop. Sur.). ARKANSAS - Herd of 22 treated cattle checked for H. lineatum in Franklin County (west central). All free of grubs. Herd checked in Crawford County (west central). Of 19 treated animals, one had grub; 3 untreated animals with total of 9 grubs with range of 1-4. (Ark. Ins. Sur., Dec. 18). ALABAMA - Inspection of 27 brood cows (beef) in Macon County showed Hypoderma spp. grubs in counts of 1-9 per animal in 10 animals of herd. No holes cut through outer skin as of last week of December. (Ledbetter).

MOSQUITOES - ALABAMA - Extremely high population of Culex spp. larvae reported in home water supply (dug well) in Lee County. Water level about 14 feet below ground where ground surface temperatures down to 14° F. (Ledbetter, Johnston).

CHICKEN BODY LOUSE (Menacanthus stramineus) - ARKANSAS - Several moderate infestations reported in Benton and Washington Counties, northwest. (Ark. Ins. Sur.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

The period December 29 - January 4 was the second consecutive reporting period this year that no screw-worms were reported in the United States. The last specimens were collected from Hidalgo County, TEXAS, on December 18, 1963. Sterile fly release totaled slightly over 130 million this period. (Anim. Dis. Erad. Div.).


Figures - Number of cases reported in infested counties for period Dec. 29 - Jan. 4
▬ · ▬ · ▬ - Limits of fly drop areas
.... - Linear drop along river valleys

CATTLE LICE - UTAH - Numerous on some Kane County herds. (Knowlton). OKLAHOMA - Light populations active on cattle in Pushmataha (southeast) and Love (south central) Counties. (Okla. Coop. Sur.). ARKANSAS - Cattle checked in Franklin and Crawford Counties negative. (Boyer, Barnes, Simco; Dec. 18). ALABAMA - Both biting and sucking lice showing up and feeding on cattle in central part of State. Damaging numbers expected as winter continues. (Ledbetter).

BED BUG (Cimex lectularius) - MICHIGAN - Single specimen found in Lansing home. Specimens submitted for identification became relatively rare during recent years. (Cardinell, Hoffman).

WINTER TICK (Dermacentor albipictus) - OKLAHOMA - Light on Pushmataha County cattle. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

INDIAN-MEAL MOTH (Plodia interpunctella) - MARYLAND - Infested wild bird seed in homes in two localities in Prince Georges County. (U. Md., Ent. Dept.).

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) - UTAH - Infested flour in home at Logan, Cache County, for more than a year. (Knowlton).

CARPET BEETLE (Anthrenus scrophulariae) - TEXAS - Heavy, localized populations reported damaging in homes in Orange County. (McKenzie).

DRIED-FRUIT BEETLE (Carpophilus hemipterus) - WASHINGTON - Large numbers under rug in home at Prosser, Benton County; causing no damage. Probably migrated indoors with cold weather. Det. by M. H. Hatch. (Cone, Gerlitz).

A POWDER-POST BEETLE (Trogoxylon prostomoides) - CALIFORNIA - Heavy in carved wood ornaments in home in Salinas, Monterey County. (Cal. Coop. Rpt.).

A WEEVIL (Ophryastes sp.) - TEXAS - Light, local infestations annoying to homeowners in Potter County. Larvae feed on roots of various plants; now probably seeking overwintering sites. (Burke).

CLUSTER FLY (Pollenia rudis) - UTAH - Large numbers found in home at Logan, Cache County. (Knowlton).

BROWN-BANDED COCKROACH (Supella supellectilium) - UTAH - Infesting apartments at Logan, Cache County. (Knowlton).

CAMEL CRICKETS - NORTH CAROLINA - Numerous under house in Wake County. (Bruce). UTAH - In basement of home at Salt Lake City, Salt Lake County. (Knowlton).

PHARAOH ANT (Monomorium pharaonis) - MARYLAND - Infested several rooms of building at College Park, Prince Georges County. (U. Md., Ent. Dept.).

STORED-PRODUCT INSECTS

POTATO TUBERWORM (Gnorimoschema operculella) - MICHIGAN - Adults collected at rate of 11 per night by blacklight trap in Monroe County storage. Storage fogged previous week with pyrethrins; temperatures maintained at 60° F. All tubers removed from other storage in county. (Laser, Wells).

RAISIN MOTH (Cadra figulilella)* - CALIFORNIA - Medium in mummified peaches in stored picking boxes in Modesto, Stanislaus County. (Cal. Coop. Rpt.).

DARKLING BEETLES (Tribolium spp.) - ARKANSAS - Specimens collected from cotton seed in storage in Mississippi County. Apparently caused cotton seed to heat. (Ark. Ins. Sur.).

BENEFICIAL INSECTS

A DAMSEL BUG (Nabis sp.) - FLORIDA - Six specimens taken in 300 sweeps in Hairy Peruvian alfalfa at Gainesville, Alachua County. (Mead).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - FLORIDA - Light in soil at Mulberry, Polk County; this is additional location in county. Det. by W. Breidenbach. (Poole, Richards).

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* Whalley, P. E. S. 1960. Ent. Gaz. 11(4):183-184.

SUMMARY OF INSECT CONDITIONS IN SOME COUNTRIES OF THE NEAR EAST AND AFRICA

1963

The six summaries of insect conditions that follow have been submitted in the 1963 Annual Report of the Regional Insect Control Project, with headquarters in Beirut, Lebanon. The first attempt to present information on the more important insect pests of the Near East in the Cooperative Economic Insect Report was made in 1955 following a request from the survey committee of the Entomological Society of America. For the benefit of CEIR readers, it may be well to point out that the Regional Insect Control Project is a cooperative program operated by the Plant Pest Control Division, Agricultural Research Service, in accordance with an agreement signed on February 18, 1954, between the U. S. Department of Agriculture and the International Cooperation Administration (now Agency for International Development). At the present time, a staff of nine entomologists is stationed in seven countries working with the personnel of the U. S. Operations Missions and Ministries of Agriculture.

The work of these entomologists is designed to fulfill commitments to the host countries, with respect to the evaluation of locust problems, the demonstration of control practices, development of insect surveys and the training of nationals in methods, procedures and the organization of applied entomology and plant quarantine work. During the last few years the Ministries of Agriculture have strengthened their Plant Protection organizations. An increased effort has been made to collect, identify and record pest species of economic importance. First-hand information on foreign pests should serve to familiarize the entomologist and the pesticide industry of the United States with the major pests in the areas reported on. It should lead to better understanding and mutual interest in the entomological problems common to the United States and other nations. (Edson J. Hambleton, Assistant to the Director (Foreign Technical Programs), Plant Pest Control Division, ARS, USDA, Hyattsville, Maryland 20781).

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Summary of Insect Conditions in Turkey

Prepared by Flournoy M. Philips

Cereal and Forage Insects: A CUTWORM (Agrotis sp.) was found damaging field crops in general throughout Turkey, particularly sugar beets; over 50,000 acres were treated. A PENTATOMID (Aelia sp.) caused damage in central and northeastern Anatolia; 48,000 acres of cereal crops were treated. Damage from the SENN PEST (Eurygaster integriceps) was very light, only 1,400 acres of wheat were treated throughout the country. A SCARAB (Anisoplia sp.) was moderately damaging to wheat in the Aegean area, with 19,000 acres being treated, and CEREAL LEAF MINER (Syringopais temperatella) caused moderate damage to wheat in the southeastern part of Anatolia. A GROUND BEETLE (Zabrus sp.) damaged wheat in the central plateau so that some fields were almost completely destroyed. Sixteen thousand acres were treated. ALFALFA WEEVIL (Hypera postica) caused heavy damage to alfalfa throughout central and western Turkey. DESERT LOCUST (Schistocerca gregaria) did not appear in Turkey, and ITALIAN LOCUST (Calliptamus italicus), MOROCCAN LOCUST (Dociostaurus maroccanus) and MIGRATORY LOCUST (Locusta migratoria) caused practically no damage during 1963. BARLEY APHID (Cuernavaca noxius), which caused heavy damage to grain crops in 1962, was of no importance in 1963. CEREAL LEAF BEETLE (Oulema melanopa) caused moderate damage to wheat in the Samsun area.

Fruit Insects: An ERMINE MOTH (Yponomeuta sp.) [1] was very damaging throughout Turkey, with over 6,000,000 trees being treated. CODLING MOTH (Carpocapsa pomonella) infested 100 percent of the apples in areas where insecticides were not applied. In areas where treatments were applied on a schedule, the infestation rate ranged from 0 to 15 percent, with an average rate of 2 percent. Over 1,000,000 trees were treated in 1963. A SPIDER MITE (Tetranychus sp.) caused moderately heavy damage to apples in the Black Sea area, and a FRUIT-TREE SPIDER MITE (Tetranychus viennensis) caused heavy damage to apples in an area north of Kastamonu Province. CHERRY FRUIT FLY (Rhagoletis cerasi) infested sweet cherry in the mountainous areas bordering central Anatolia. ORIENTAL FRUIT MOTH (Grapholitha molesta) was controlled adequately in the region of the Sea of Marmara when over 700,000 peach and apricot trees were treated. SAN JOSE SCALE (Aspidiotus perniciosus) was found in the Samsun area and, in tracing the source, it has been found in Bursa and Istanbul in nurseries. A SAWFLY (Hoplocampa sp.) caused light damage in the Sakarya-Amasya area. A LEAF ROLLER (Archips sp.) caused moderate damage in eastern and northern parts of Anatolia. Heavy infestations of CITRUS RUST MITE (Phyllocoptruta oleivora) were found in all of the citrus-growing areas of Turkey, but MEDITERRANEAN FRUIT FLY (Ceratitis capitata) caused practically no damage to citrus. Over 12,000,000 olive trees were treated this year to control the OLIVE MOTH (Prays oleellus) in areas by the Aegean Sea and Sea of Marmara. A CURCULIONID (Curculio sp.) caused heavy damage to hazel nuts in areas near the Black Sea and Sea of Marmara, with over 100,000 acres being treated.

Truck Crop Insects: The TWELVE-SPOTTED MELON BEETLE (Epilachna chrysomelina) caused heavy, isolated damage to melons in the Diyarbakir area. The COLORADO POTATO BEETLE (Leptinotarsa decemlineata) was found for the first time in Turkey in 23 locations adjacent to the border of Greece-Bulgaria. Three hundred acres of eggplant and potatoes were treated. A BUPRESTID (Coraebus sinuatus) caused moderate damage to strawberries on the Mediterranean coast. A CABBAGE BUTTERFLY (Pieris sp.) cuused heavy damage to cabbage in the Aegean Sea coastal area.

Cotton Insects: PINK BOLLWORM (Pectinophora gossypiella) was found to be infesting from 5 to 80 percent of the green bolls examined in the area by the Aegean Sea. Prior to 1963, this insect has never been much of a problem in this area. SPINY BOLLWORM (Earias insulana) caused losses estimated at 1 to 3 percent in the Adana Plains area. A SPIDER MITE (Tetranychus sp.) caused heavy damage to cotton in the Adana Plains.

Stored-product Insects: KHAPRA BEETLE (Trogoderma granarium) was found infesting many grain storage structures throughout the southern half of Turkey.

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[1] Friese, G. 1960. Beiträge zur Entomologie 10(1/2):2.

Summary of Insect Conditions in Iran

Prepared by G. Farahbakhsh [1]

Cereal and Forage Insects: No invasions of the DESERT LOCUST (Schistocerca gregaria) have occurred since November 1962. MOROCCAN LOCUST (Dociostaurus maroccanus) occurred in light infestations in Azerbaijan, Khurasan, Gurgan and Fars Provinces, which necessitated control on 83,650 acres. SENN PEST (Eurygaster integriceps) infestations were severe in Isfahan, Ghazvin and also in the Tehran area. Chemical control was applied to 125,000 acres, and 500 acres were treated with biological control methods on an experimental basis. DURRA STALK BORER (Sesamia cretica) caused damage to corn in Veramin and the Caspian Sea area, to sorghum in Baluchistan, and to sugarcane in Khuzistan. EUROPEAN CORN BORER (Ostrinia nubilalis) caused heavy damage to corn and sorghum in the Caspian Sea area, and CEREAL LEAF MINER (Syringopais temperatella) was light on wheat and barley in the southern and southeastern provinces. ALFALFA WEEVIL (Hypera postica) was the most serious pest of alfalfa in the country. The heaviest damage occurred in Karaj, and the first cutting of alfalfa suffered the most damage. SPOTTED ALFALFA APHID (Therioaphis maculata) occurred in most of the alfalfa-producing area but, because of the presence of an active parasite, it was not a serious problem. An ARMYWORM (Pseudaletia sp.) was a minor pest of rice in the area adjacent to the Caspian Sea.

Vegetable Insects: BEET ARMYWORM (Spodoptera exigua) infestations occurred in the sugar-beet areas of Fars, Kermanshah, Isfahan and Rezaiyeh in numbers necessitating extensive control practices. A SUGAR-BEET CROWN BORER (Gnorimoschema ocellatella) was severe in most sugar-beet areas. Larvae of CABBAGE BUTTERFLIES (Pieris brassicae and P. rapae) damaged cabbage leaves in all cabbage-producing areas. A hymenopterous parasite was observed in the Tehran area. BALUCHISTAN MELON FLY (Myiopardalis pardalina) caused economic damage to melons and cucumbers in all producing areas. TWELVE-SPOTTED MELON BEETLE (Epilachna chrysomelina) damaged cucumbers and melons in all producing areas.

Cotton Insects: OLD WORLD BOLLWORM (Heliothis armigera) was the most important pest of cotton in Mazanderan and Gurgan Provinces. Extensive aerial control was done to prevent insect damage. SPINY BOLLWORM (Earias insulana) was still a serious problem in cotton-producing areas of Khuzistan Province and the central part of the country. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) occurred in most cotton-producing areas.

Deciduous Fruit Insects: CODLING MOTH (Carpocapsa pomonella) occurred in all fruit-producing areas. Apples were severely damaged, but pears and quince sustained only light damage by this insect. ERMINE MOTH (Yponomeuta padella)[2] caused severe damage in Azerbaijan and Khurasan Provinces where many apple and plum trees were defoliated. A CERAMBYCID TWIG BORER (Osphranteria coerulescens) caused severe damage in the central and western parts of the country and also in the Tehran area. Apple, pear, apricot, quince, peach and cherry trees were attacked resulting in the killing of the terminal branches of the trees. OYSTERSHELL SCALE (Lepidosaphes ulmi) and another SCALE INSECT (L. malicola) were severe on apple trees in the Tehran area. Heavy infestations of PEAR LACE BUG (Stephanitis pyri) and a SPIDER MITE (Bryobia rubrioculus) occurred on apple trees in the Tehran area. SHOT-HOLE BORER (Scolytus rugulosus) and LEOPARD MOTH (Zeuzera pyrina) were the major pests of fruit trees in Azerbaijan and Khurasan Provinces, in the central part of the country, and in the Tehran area.

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[1] Entomologist--Iran Department of Plant Protection.

[2] Friese, G. 1960. Beiträge zur Entomologie 10(1/2):2.

Citrus Insects: PURPLE SCALE (*Lepidosaphes beckii*), DICTYOSPERMUM SCALE (*Chrysomphalus dictyospermi*), CHAFF SCALE (*Parlatoria pergandii*), BLACK PARLATORIA SCALE (*Parlatoria zizyphus*), YELLOW SCALE (*Aonidiella citrina*), and CITRUS PULVINARIA (*Pulvinaria aurantii*) were the most serious pests on citrus fruits in the area near the Caspian Sea. CITRUS RUST MITE (*Phyllocoptruta oleivora*) and CITRUS RED MITE (*Panonychus citri*) occurred in the area adjacent to the Caspian Sea causing light to heavy damage to citrus crops.

Olive Insects: BLACK SCALE (*Saissetia oleae*) populations were low in the Rudbar area as a result of regular spray programs for several years. Chemical control was applied on 500,000 trees twice in March and April and twice in September and October. OLIVE PSYLLID (*Euphyllura olivina*) infestations were light and estimated loss of young fruit was only 0-10 percent.

Summary of Insect Conditions in Afghanistan

Prepared by E. R. Millet

Cereal and Forage Insects: There was no breeding or invasions of DESERT LOCUST (*Schistocerca gregaria*) in Afghanistan in 1963. A 600-acre infestation of local GRASSHOPPERS, probably of the genus *Dociostaurus*, was reported controlled at Charikar, 40 miles north of Kabul, in the late spring and early summer. Several infestations of this genus were also reported from the Herat area. Small GRASSHOPPERS gave some trouble near Maiwand, south of Kabul, this summer. ITALIAN LOCUST (*Calliptamus italicus*) and MOROCCAN LOCUST (*Dociostaurus maroccanus*) were reported to have been controlled on an estimated 9,000 acres in the northern provinces this spring.

WEEVILS (*Hypera* sp. and *Sitona* sp.) were extremely light in alfalfa and native clover in Afghanistan during the year. Numerous sweepings during the summer months revealed some *Sitona*, but practically no *Hypera* were observed. Specimens of an undetermined small green WEEVIL (*Myllocerus* n. sp.) were not collected this year, but a few specimens of another WEEVIL (*Sympiezomias* sp.) were collected, as well as two specimens of the subfamily *Eremninae*. SPOTTED ALFALFA APHID (*Therioaphis maculata*) and SWEETCLOVER APHID (*T. riehmi*) were light in alfalfa during the summer and did not begin to show up in any appreciable numbers until September. LADY BEETLES (*Coccinella septempunctata* and *C. undecimpunctata*) were noted in abundance in alfalfa fields during the summer. A CUTWORM (*Agrotis* sp.) was damaging to young corn around Baghrami and also in Patkia Province. A RICE STEM BORER, probably the PADDY BORER (*Tryporyza incertulas*), was found light in rice around Matun. This is apparently the first evidence of this pest in Afghanistan.

Fruit Insects: A LEAFWORM (Yponomeutidae) was light on figs at Coriz-i-Mir, but was observed as numerous around Matun in Paktia Province. A SCALE INSECT was found extremely heavy on young twigs and limbs of almonds in the Kabul area. A LACE BUG, probably *Stephanitis pyri*, was extremely heavy, 5 to 10 adults per leaf, on apple in the formal garden at Baghlan. The lace bug was also observed at the new Ministry farm at Kunduz, and was especially heavy on apple at the old Ministry farm at Kunduz. An APHID (*Pterochlorus persicae*) which has been heavy on peach every year at Coriz-i-Mir, was found heavy on the limbs of cherry at Baghlan in 1963. Limbs were sometimes covered for 6 inches or more. A FRUIT-TREE SPIDER MITE (*Bryobia rubrioculus*) was light to moderate on apple in the Kabul and Ghazni areas, but heavy on some apple trees near Paghman. CODLING MOTH (*Carpocapsa pomonella*) was again widespread on apples in Afghanistan and caused 25 to 50 percent damage in most orchards. The ERMINE MOTH (*Yponomeuta padella*) was also destructive to apple, apricot and almonds, particularly around Ghazni. APHIDS, mostly APPLE APHID (*Aphis pomi*), were heavy as usual on all of the apple trees in Afghanistan this year. Infestations of another APHID (Anuraphis mali) were lighter.

Vegetable Insects: MAIZE BORER (Chilo zonellus) infested an estimated 20 percent of the sweet corn plantings at the Ministry farm of Shishambagh in Jalalabad. A CUTWORM (Agrotis sp.) was again extremely damaging to sugar beets in Kataghan Province. Some fields showed as much as a 25-percent loss in stand. MELON FLY (Dacus cucurbitae) was reported heavy, with infestations up to 100 percent in some melon and cucumber fields around Jalalabad. It was light on the Shishambagh farm where spraying was conducted and plantings were early. BALUCHISTAN MELON FLY (Myiopardalis pardalina) infestations were reported to average only about 5 percent on sweet melons in the Helmand Valley. There was a much reduced planting in the Valley during 1963 because of the high annual loss from this pest. Watermelon fields at Marja and Bolen showed 25 percent infestation by Baluchistan melon fly in September. No watermelons examined were found to have any infestation of the small, black WEEVIL (Baris granulipennis). The RED PUMPKIN BEETLE (Raphidopalpa foveicollis) was heavy on young cucumber plantings at Bolen in the Helmand Valley; as many as 2 to 4 adults per young 3-inch plant were observed. TWELVE-SPOTTED MELON BEETLE (Epilachna chrysomelina) was extremely heavy and damaging to several melon fields near Baghlan. Adults ranged 6 to 12 per plant and many small immature melons were damaged. CABBAGE APHID (Brevicoryne brassicae) was heavy on cabbage in gardens at Kabul and in the Helmand Valley.

Citrus Insects: CITRUS WHITEFLY (Dialeurodes citri) was light on citrus in the Matun area, but was heavy around Jalalabad. CITRUS PSYLLA (Diaphorina citri) was again heavy and damaging in the Jalalabad area, but none were observed in Matun. CITRUS LEAF MINER (Phyllocnistis citrella) was moderate in the tender growth of young citrus trees at both Matun and Jalalabad. YELLOW SCALE (Aonidiella citrina) was again heavy in groves at Jalalabad and Laghman, but none were observed in the Matun area. A SPIDER MITE (Eutetranychus orientalis) was moderate on citrus at Jalalabad, but this pest was not noted in the Matun area.

Cotton Insects: CUTWORMS (Agrotis spp.) and WIREWORMS were reported to have very heavily damaged young cotton in Kataghan Province. COTTON APHID (Aphis gossypii) was heavy in numerous cotton fields around Baghlan in Kataghan Province during September. SPIDER MITES (Tetranychus spp.) were light in the Helmand Valley as was the SWEETPOTATO WHITEFLY (Bemisia tabaci) this year. The SPINY BOLLWORM (Earias insulana) infestation was reported to have averaged only 3 to 5 percent at Marja and Shemalon, but the pest was reported to be extremely heavy and damaging around Jalalabad. PINK BOLLWORM (Pectinophora gossypiella) was reported light in the Jalalabad area due to the very cold winter early in the year. Apparently neither of these two bollworms occurs in Kataghan Province in the north.

Forest and Shade Tree Insects: An extremely heavy infestation of a black APHID (probably Aphis craccivora) occurred in the tip growth of young trees, Acacia, in the Ministry forestry nursery at Paghman. There was a heavy emergence of CICADAS in the Kabul area during the month of June. Some damage to limbs and twigs from egg laying was apparent. Four distinct species, Psalmochavias rugipennis, Paharia lacteipennis, Paharia casyapae and Cicadatra anoea, were identified by description. This brood of mixed species had not been reported in abundance in the Kabul area since 1954. TRUNK BORERS (Aeolesthes sarta, Capnodis cariosa and Melanophila picta) were still destructive to elm and poplar trees along streets in Kabul and the surrounding country. A LEPIDOPTEROUS LEAFWORM was extremely damaging on the leaves of all elms around Baghlan this summer, and a LEAF BEETLE was equally damaging to the leaves of mulberry. Neither of the latter specimens was identified.

Stored-product Insects: KHAPRA BEETLE (Trogoderma granarium) was the most common and plentiful pest found in wheat storage warehouses in Afghanistan this year. RICE WEEVIL (Sitophilus oryzae) and RED FLOUR BEETLE (Tribolium castaneum) were the most common pests found in PL-480 wheat arriving in Afghanistan from the United States.

Man, Animal and Household Insects: FOWL TICK (Argas persicus) was quite a problem at the Ministry chicken farm at Beni Hissar this summer. A COCKROACH (Shelfordella qussakovskii) was again numerous in garages and storerooms in Kabul this year. This species migrates into houses but does not seem to breed or build up a population in dwellings. This species was described in part from Kabul in 1950. HOUSE FLY (Musca domestica) appeared to have a somewhat higher population in Kabul this year over 1962. A LOUSE FLY (Hippobosca longipennis) was again noted as numerous on dogs. This pest seems to prefer getting under the hair on the neck area of the animal.

Summary of Insect Conditions in the Republic of the Sudan

Prepared by Arthur Kaatz

Cereal and Forage Insects: DESERT LOCUST (Schistocerca gregaria) was limited to small numbers of the solitary phase which occurred in several locations throughout the summer breeding range. On the Red Sea coast, a minor infestation was found in millet cultivations in the Arbaat Delta, north of Port Sudan, and another small, scattered infestation in several small areas south of Port Sudan. TREE LOCUST (Anacridium moestum melanorhodon) infestations increased during the first six months and then tapered off in the dry season. Very light, scattered rains affected their breeding during July and August. Only small patches of easily controlled "hopper" stage locusts were found in late August and September. Early season controls were carried out successfully in the Blue Nile, Kordofan, Darfur, Khartoum and Northern Provinces. Infestations in Khartoum and Northern Provinces were found only along the Nile River system. A TROPICAL MIGRATORY LOCUST (Locusta migratoria migratorioides) apparently was not present this year as no reports of its presence were received.

DURRA STALK BORER (Sesamia cretica) was widespread in sorghum (durra) plantings throughout central Sudan and in Equatoria Province causing damage in many local areas. Sugarcane along the Blue Nile and the Atbara River was also infested. Controls attempted in sugarcane fields were not successful. A STALK BORER (Chilo sp.) was reported infesting corn (maize), sorghum and sugarcane in Northern Province from Shendi to Atbara. SOUTHERN GREEN STINK BUG (Nezara viridula) infestations were light on sorghum and millet in the Tokar Delta during January, February and March. SORGHUM MIDGE (Contarinia sorghicola) caused heavy losses in sorghum in the Gezira area during January. BEET ARMYWORM (Spodoptera exigua) infested broadbeans, berseem, safflower, peanuts and sorghum at Khashm el Ghirba demonstration farms and in most cultivations along the Nile River north of Khartoum. Spraying was required on numerous cultivations. A NOCTUID (Heliothis armigera) infested many broadbean plots at Khashm el Ghirba and near Shendi, and some controls were carried out in both areas; it was also present in lubia (pulse) near cotton fields. SPOTTED ALFALFA APHID (Therioaphis maculata) and COWPEA APHID (Aphis craccivora) were present in berseem fields along the Nile River system, and several berseem fields were sprayed near Soba. APHIDS were also found in wheat and barley plots at Khashm el Ghirba and in peanut fields in the Dongola-Merowe District. DURRA ANDAT BUG (Agonoscelis pubescens) was present in Kassala and Blue Nile Provinces. Several sorghum and sesame fields were sprayed in both areas. Normally, controls are carried out during the dormant season by spraying the resting sites which are the shady portions of trees. GRASSHOPPERS were very numerous the first half of the year at the edges of forage crops. Fields in Kassala, Blue Nile and Kordofan Provinces were sprayed.

Attacks died out during the dry period in July and August. CRICKETS were present in berseem in the Northern Province near Shendi and Merowe as well as in the extreme north near Wadi Halfa where most of the small fields were sprayed and infestations checked. DURRA APHID (*Aphis sorghi*) was reported to be present on durra (sorghum) in Kassala District. No controls were carried out. THRIPS attacked peanuts and lubia (pulse) plots in Kassala District. Some plots were damaged from 15 to 18 percent. Sprays for control were estimated to be 85 percent successful. EGYPTIAN COTTONWORM (*Prodenia litura*) was reported in sorghum fields in the Nuba Mountain area during May and on okra in Kassala District. SNAILS were reported on maize, tomato and banana in Equatoria Province. An unidentified STEM BORER was reported present in barley and wheat plots at Khashm el Ghirba during February. A PYRALID (*Antigastra catalaunalis*) was found damaging terminal buds and flowers of sesame in Kordofan Province during September.

Fruit Insects: Infestations of a CITRUS LEAF MINER (*Phyllocnistis citrella*) have increased the last two years and this insect has become a major pest of citrus in most of the citrus-growing areas of The Sudan. An estimated 60 to 70 percent of the orchards are infested. Results of control activities have varied and have been effective only where conducted at the first sign of infestation. Attacks of a FRUIT FLY (*Pardalaspis quinaria*) were reported in several guava orchards along the Nile north of Khartoum. COCCIDS (*Lepidosaphes tapleyi* and *Parlatoria pseudaspidiotus*) were present in most mango orchards up and down the Nile River system. Approximately 65 percent of the trees are reported to be infested. Spray programs were carried out in Northern, Khartoum, Kassala and Blue Nile Provinces from February through mid-June. PARLATORIA DATE SCALE (*Parlatoria blanchardi*) and a TERMITE (*Odontotermes sudanensis*) are serious in date growing regions of the Northern Province. About 85 percent of the trees were reported to be infested. COTTONY-CUSHION SCALE (*Icerya purchasi*) attacks on immature mango trees in Blue Nile Province caused a reported 30 percent "die out" of young seedling trees. HIBISCUS MEALYBUG ("*Phenacoccus*" *hirsutus*)-SCALE INSECT complex has been persistent on citrus, guava, and ornamental shrubs in Northern, Khartoum, Kassala, Blue Nile and Darfur Provinces. Spraying activities have generally been unsuccessful. BANKS GRASS MITE (*Oligonychus pratensis*) was reported on date palms in the Northern Province and spraying activities were carried out simultaneously with scale insect control. A CITRUS SPIDER MITE (*Eutetranychus orientalis*)1/ was reported on citrus in Darfur, Khartoum, Kassala, Blue Nile and Northern Provinces. Infestations of a PAPILIONID (*Papilio demoleus demodocus*) on lemon trees in Equatoria, Blue Nile and Khartoum Provinces required control measures in several districts in each Province. Controls were generally successful. FLORIDA RED SCALE (*Chrysomphalus aonidum*) was observed on citrus near Juba, Yei, Meridi and Nzara, and infestations were heavy on fruits of grapefruit near Nzara. No controls were conducted. A FRUIT FLY (*Dacus* sp.) was present in guava fruit in Khartoum Province and on citrus in Northern Province. BLACK APHIDS were observed on citrus in Equatoria and Kassala Provinces.

Vegetable Insects: TWELVE-SPOTTED MELON BEETLE (*Epilachna chrysomelina*) and RED PUMPKIN BEETLE (*Raphidopalpa foveicollis*) are the two most important vegetable crop insects in The Sudan. Although spraying operations were carried out in many regions, 75 percent of the cucurbit crops in Northern and Khartoum Provinces were destroyed. ONION THRIPS (*Thrips tabaci*) was serious in Khartoum, Northern and Kassala Provinces, and onion yields were drastically reduced in these regions. BLISTER BEETLES, *Mylabris* sp., *Epicauta* sp. and *Coryna* sp., were widely

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1/ This species formerly identified as *Eutetranychus banksi*; however, all previous records of *banksi* in North Africa and the Near East should be *E. orientalis*. See Baker, E. W. and Pritchard, A. E. 1960. Hilgardia 29(11):464.

distributed and severe on okra, eggplant, radishes, beans, spinach and tomatoes. Most severe attacks occurred during July, August and September. Controls have been successful where carried out. DIAMONDBACK MOTH (*Plutella maculipennis*) was reported in all spinach, cabbage and radish plantings. A FRUITWORM (*Heliothis armigera*) attacked tomato fruit at Khashm el Ghirba and many gardens along the Blue Nile and the Nile north of Khartoum. Eggplant, okra and bean fields were reported infested in Shendi District. CABBAGE LOOPER (*Trichoplusia ni*) was reported causing heavy damage to carrots, turnips and cabbage during February and March at Wadi Halfa. An APHID (*Aphis* sp., prob. *craccivora*) was reported on beans, tomato, and other vegetables near Wadi Halfa during January and February, but little damage occurred. The aphid was also present in the Dongola-Merowe reach of the Nile. SPINY BOLLWORM (*Earias insulana*) infested okra and eggplant at Khashm el Ghirba during May, and was present in Northern Province during January and February and again in May and June, with infestations from 5 to 15 percent at Shendi. HIBISCUS MEALYBUG ("*Phenacoccus*" *hirsutus*) was present in okra during January through June in the Dongola-Merowe District, and many plots were pulled to destroy infestations. A TINGID (*Urentius echinus*) was widespread in practically all old stands of eggplants. A HORNWORM and a SWEETPOTATO WEEVIL (*Cylas formicarius*) were present on sweetpotato in Equatoria Province. A FRUIT FLY (*Dacus* sp.) was present wherever cucumbers and melons are grown, being serious in Wau and El Obeid Districts; destroyed 60 percent of cucumbers in the Northern Province. Other insects on vegetables included LEAFHOPPERS, WHITEFLIES, FLEA BEETLES, TERMITES, ARMYWORMS, GRASSHOPPERS, THRIPS and APHIDS in varying degrees throughout the different districts.

Cotton Insects: COTTON JASSID (*Empoasca lybica*) was the most important cotton insect in all cotton-growing regions. During January-March, it reduced yields almost 15 percent in the Tokar Delta. Peak infestations were in mid-March. Cotton jassid had been a minor problem in the Gash Delta. Throughout the Gezira, Blue and White Nile regions, infestations started building up in late August and increased rapidly by mid-September. Aerial and ground spraying started in late September on an estimated 700,000 acres resulting in a reduction of population but not control. The second aerial spraying started during mid-October. The 1963 cotton crop was severely damaged. Populations varied within districts. SWEETPOTATO WHITEFLY (*Bemisia tabaci*) was as widespread as cotton jassid. It is second in importance and simultaneous controls are the usual practice. Infestations of sweetpotato whitefly were slight in the Gash and Tokar Deltas, except for being severe at Tokar townsite. Infestations in early cotton at Zeidab scheme north of Shendi were sprayed three times during June. In the Gezira, Blue and White Nile regions, infestations of sweetpotato whitefly alternated in density with cotton jassid during September, building up rapidly which resulted in a population explosion by mid-October. Counts of 2,000 to 10,000 per 100 leaves were reported. Many fields were dripping honeydew. The first spraying succeded in reducing the population but did not control the whitefly. The second spraying started immediately after the first was completed in mid-October and a third was applied in November. This was a "whitefly year" in the cotton-growing area of Sudan. A COTTON THRIPS (*Caliothrips fumipennis*) was present in the Tokar Delta but caused no damage. In the Gash Delta, populations built up during early October enough to warrant spraying. Infestations of the thrips were general in the Sennar District, and spraying was carried out during August and September. This pest was reported in both Kosti and Dueim Districts where infested fields were sprayed in conjunction with cotton jassid control. Spotted infestations were reported from Gedaref and were sprayed. Many "pockets" of the thrips were reported in the south and central Gezira. A FLEA BEETLE (*Podagrica puncticollis*) was again serious in the Gedaref District during August and September; margins of 25,000 acres of cotton were sprayed to prevent invasions from nearby fallow ground. In central Gezira, heavy damage occurred to three cotton blocks before beetle was brought under control; 15,000 acres sprayed during August. *P. punticollis* also caused serious damage in Melut scheme; 3,000 acres sprayed. All cotton seed in the government schemes is treated with a systemic insecticide to protect cotton seedlings from flea beetle attacks. Infested trial plots at Khashm el Ghirba were sprayed. Early attacks were also reported in the Sennar District. COTTON APHID (Aphis gossypii) was present in the Tokar Delta, but caused no damage. It was common in all cotton fields throughout Equatoria Province and was also reported present in the Nuba Mountains. COTTON STAINERS (Dysdercus spp.) were common in Equatoria Province cotton fields, with heavy infestations reported from Yei and Meridi Districts during January. They were important insects on cotton in the Nuba Mountains. A regular control campaign was carried out during the dormant season in June. EGYPTIAN COTTONWORM (Prodenia litura) was reported present in several blocks in the Managil and along the White Nile south of Kosti. BOLLWORMS (Heliothis armigera and H. peltigera) were present in the Tokar Delta, but damage was negligible compared to last year when much of the crop was lost. H. armigera damaged about 5 percent of the bolls in the Gash Delta during January, then became inconsequential. It was present in the Gezira and in fringe areas of Gedaref, Sennar, Kosti and Dueim Districts. Several fields were treated in each district. A RED BOLLWORM (Diparopsis watersi) was reported present during March in the Tokar Delta and during January-March in the Gash Delta where it was reported to have infested 20 to 30 percent of the bolls. It was serious in cotton in the Nuba Mountains during September and October and also serious in parts of the Gedaref District where last season's cleanup campaign was lax. Spraying was done during October in both the Nuba Mountains and the Gedaref District. In the White Nile schemes, D. watersi is being reported further north each year. BOLLWORMS (Earias insulana and E. biplaga) were present in the Tokar Delta, but were serious only at the end of the season during March and April. E. insulana infested up to 40 percent of cotton bolls at Khashm el Ghirba trial plots. Infestations were reduced to some extent by several sprayings during February. A reported 20 percent of the bolls were infested during January in the Gash Delta dropping down to 2 percent by the end of March; and infestations were present in fringe areas around Sennar District, the Gezira, White Nile and Gedaref sections. PINK BOLLWORM (Pectinophora gossypiella) caused slight damage in trial plots at Khashm el Ghirba and was sprayed at the same time as other bollworms. It caused some damage during March and early April in the Tokar Delta and was present in spotted localities along the Blue and White Niles but pink bollworm was common and the main pest of cotton in Equatoria Province during 1963. All cotton seed is heat-treated to keep infestations under control. A TERMITE (Microtermes aluco) caused considerable damage to cotton in the Tokar Delta. Up to 40 percent of the plant holes were destroyed in some blocks. It was present in all dry areas in this region and was reported present in most of the other cotton-growing regions. Cotton seed was treated with insecticide to help keep down damage. COTTON STEM BORER (Sphenoptera gossypii) caused slight damage in the Tokar Delta but was reported in the Gash Delta as infesting from 20 to 60 percent of stalks during March. This is a great increase over prior years in the Gash Delta, which may be due to the presence of cotton stalk material stored nearby at a paper factory. GRASSHOPPERS were baited for control in cotton fields of the Tokar Delta, and controls were also necessary in seven blocks in the central group of the Gezira. Other insects reported on cotton were small ANTS in the Nuba Mountains and a MIRID (Helopeltis sp.) and COTTONSEED BUG (Oxycarenus hyalinipennis) in Equatoria Province. The cottonseed bug was also present in Shambat cotton-breeding plots. A PSYLLID was reported to be common on cotton in a small area in the Meridi District. A LYGUS BUG was present in the Sennar-Suki District, but damage was slight as compared with 1962 when 10,000 acres required treatments.

Stored-product Insects: LESSER GRAIN BORER (Rhyzopertha dominica), RICE WEEVIL (Sitophilus oryzae), ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) and KHAPRA BEETLE (Trogoderma granarium) were present in practically all areas where agricultural products were stored. Khapra beetle is most serious in the Port Sudan area as this is the major shipping center for the country. Most of the exports fumigated at Port Sudan are for the khapra beetle. The FLOUR BEETLES (Tribolium confusum and T. castaneum) were a major problem due to their very dense populations in practically all stored-product warehouses. A GRAIN MOTH (Corcyra sp.), CADELLE (Tenebroides mauritanicus), COCKROACHES and SILVERFISH were present in varying numbers in Port Sudan and other storage centers. Except for sanitation measures, very little control activities were attempted this year.

Castorbean Insects: CASTORBEAN CATERPILLAR (Achaea catella) and a PHYCITID (Phycita diaphana) were found on castorbean at Hudeiba, the latter being found in flower clusters as well as on the leaves. A. catella and the NOCTUIDS (Grammodes geometrica, Spodoptera exigua and Prodenia litura) caused slight damage at Khashm el Ghirba before being controlled by spraying activities. A SPIDER MITE (Eutetranychus orientalis) appeared on the late-sown castorbean in the Gash Delta during February. Also present in the Gash Delta were WHITEFLIES, LEAFHOPPERS (Erythroneura sp.), THRIPS, TERMITES and a STEM BORER (Sphenoptera sp.).

Coffee and Cacao Insects: A LEAF MINER (Leucoptera sp.) caused damage to coffee in several localities in Equatoria Province. Increased attacks by a LEAF SKELENTONIZER (Leucoplema dohertyi) were reported in 1963. GREEN SCALE (Coccus viridis) and another SCALE (Coccus sp.) were reported in all coffee-growing areas. Attacks of a MEALYBUG were more numerous than in 1962. TERMITES caused damage to trees near Yambio and several nearby areas. All government coffee schemes were sprayed to control the above insects. Control measures were also undertaken to control the COFFEE BERRY BORER (Stephanoderes hampei) during May and June. WHITE COFFEE BORER (Anthores leuconotus) was observed in three plantations near Ezo. A COFFEE TRUNK BORER was reported at Yambio, Yei, Juba, Lujula, Wadupe, Kagelu and Torit cultivations. Tree trunks were treated with an insecticide on all government schemes. A THRIPS (Diarthrothrips coffeae) was reported present on a few trees in the Yambio District. THRIPS and TERMITES at Juba and at Yambio were the only insects reported observed on cacao.

Summary of Insect Conditions in Eritrea, Ethiopia

Prepared by W. O. Ridgway

Cereal and Forage Insects: DESERT LOCUST (Schistocerca gregaria) breeding occurred in planted millet on the Red Sea coastal plain north of Massawa during early February. Local, solitary populations were supplemented by an influx of a gregarious phase swarm from across the Red Sea, possibly Yemen. Both solitary and gregarious phases prevailed simultaneously and continued so for the duration of the breeding season. Hatching was erratic and widely scattered. No extensive bands developed. Damage to crops was negligible. The combination of some aerial drift spraying, desiccation of eggs laid in drying drift sand and parasitism of late-stage "hoppers" and fledgling adults eliminated the threat in an area covering approximately 12 square miles. A small amount of hatching occurred in another coastal area approximately 25 miles north of the above area. Twenty-three first and second-stage "hopper" bands were controlled there with an exhaust sprayer. The bands were scattered over an area of six square miles and all known bands were eliminated. BUSH GRASSHOPPER (Phymateus viridipes) was commonly found clustered on small grains during August and September, but no damage was noted by the first to fourth-stage nymphs except to two common native bushes, Verbascum sp. and Ocimum sp., and to cultivated broadbeans. Reports of above normal numbers were received from all parts of the plateau region. Some hand dusting and baiting by the Ethiopian Locust Unit was done where infestations were very conspicuous.

NUTGRASS ARMYWORM (Spodoptera exempta) appeared in September in two areas of southern Eritrea. Teff, a small seeded Gramineae, cultivated for making a local bread, was seriously damaged. The infestations were controlled by thousands of migrating storks, some hand dusting and by parasitism. DURRA STALK BORER

(*Sesamia cretica*) and MAIZE STALK BORER (*Busseola fusca*) were both common in corn and sorghum. The tall, large stems of local varieties seem to tolerate a heavy population. A GREEN STINK BUG (*Nezara* sp.) was common in the eastern lowlands, but did not reach population levels to justify controls. CORN LEAF APHID (*Rhopalosiphum maidis*) was very common on sorghum, but was heavily parasitized and attacked by predators. An EARWORM (*Heliothis armigera*) damaged imported Kenya white corn, but did not seem to injure the native flint corn seriously. The SUDAN DURRA BUG (*Agonoscelis versicolor*) was common on durra and sesame.

Fruit Insects: MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) was common in all commercial citrus groves. An average of 25 per week from mid-August onward were trapped in a single Steiner trap placed in an orchard of mixed citrus. BLACK PARLATORIA SCALE (*Parlatoria zizyphus*) was heavy on all citrus trees which were shaded by larger trees such as mango and papaya. Lighter infestations occurred on open, pruned, unshaded trees. A LEAF MINER (*Phyllocnistis* sp.) was common on citrus, being most important on nursery stock. A PSYLLID (*Spanioza erythreae*) caused some damage to nursery stock and young trees; some spraying was done. MEALYBUGS (*Pseudococcus* spp.) caused some concern on bananas due to export requirements, but caused very little economic damage. Small ANTS and weed hosts were closely related to the spread of the mealybugs in plantations. Dipping of bananas for export in a 2.0 percent oil solution failed to control the mealybugs which were in the dried flowering tips of the bananas. A MITE (*Eutetranychus* sp., probably *orientalis*) was common on papayas in the western lowlands. A ROOT LESION NEMATODE (*Pratylenchus* sp.) caused much concern on bananas, particularly in new, young plantations. Some soil fumigation and experimental dipping of planting shoots were done.

Vegetable Insects: A CUTWORM (*Agrotis* sp.) caused considerable damage to young plants where weed growth had prevailed. A MELON FLY (*Dacus ciliatus*) caused extensive malformation of Zucchini squash grown in the eastern lowlands. DIAMONDBACK MOTH (*Plutella maculipennis*) and CABBAGE APHID (*Brevicoryne brassicae*) were very serious on cabbage. Controls were necessary. POTATO APHID (*Macrosiphum euphorbiae*) was very heavy on most potato and tomato plantings. SWEETPOTATO WHITEFLY (*Bemisia tabaci*) was very heavy on tomatoes on the plateau and in the western lowlands. TWELVE-SPOTTED MELON BEETLE (*Epilachna chrysomelina*) and MELON APHID (*Aphis gossypii*) were common on cucurbits and caused serious damage in many areas.

Cotton Insects: The SPINY BOLLWORM (*Earias insulana*) and OLD WORLD BOLLWORM (*Heliothis armigera*) were the two most destructive pests of cotton. The use of insecticide for their control has been accepted as a necessity. The SWEETPOTATO WHITEFLY usually stimulates control because it becomes so numerous and causes readily noticeable damage. An outbreak of THRIPS (*Caliothrips* sp.) and a FLEA BEETLE (*Podagrica puncticollis*) occurred on cotton in the two to six-leaf stage in the western lowlands. Controls were necessary to prevent complete defoliation of the plants. COTTON STAINERS (*Dysdercus cardinalis* and *D. nigrofasciatus*) were common in the eastern lowlands but not in the western lowlands. PINK BOLLWORM (*Pectinophora gossypiella*) was common during late season on cotton, okra and wild hibiscus in the western lowlands but was no economic threat. None was found in the eastern lowlands. A COTTON STEM BORER (*Sphenoptera patrizii*) presents a threat to growing stub cotton for more than one year. This practice is being experimented with in the western lowlands where flood-type irrigation, in a single application, is practiced. Second-year yields from the previous year's roots have doubled those of the first season, besides producing a much earlier crop. A TERMITE caused serious thinning of cotton stands in the diverted water system of cultivation in the eastern lowlands.

Stored-product Insects: RICE WEEVIL (Sitophilus oryzae), LESSER GRAIN BORER (Rhyzopertha dominica), A FLOUR BEETLE (Tribolium sp.) and ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) were common in all older grain storages, particularly in some of the older U. S. PL 480 grain sorghum. A BRUCHID (Callosobruchus chinensis) was common in broadbeans being inspected for export.

Shade Tree and Ornamental Insects: HEMISPHERICAL SCALE (Saissetia hemisphaerica) and BLACK SCALE (S. oleae) were common on Ficus sp. and Schinus sp. A BOMBYCID (Trilocha ficicola) defoliated many of the Ficus sp. APHIDS were very heavy on ornamental flowers and required control. TERMITES were observed weakening roots of large Eucalyptus trees to the extent that they were easily blown over by the wind.

Summary of Insect Conditions in Ethiopia

Prepared by P. M. Schroeder

Cereal and Forage Insects: NUTGRASS ARMYWORM (Spodoptera exempta) was extremely heavy in all provinces starting in Harar in April and reaching a peak in Shoa Province during June. Grass crops had losses that ranged from 30 to 100 percent. In Harar Province, the average losses were estimated to be approximately 75 percent. A complex of GRASSHOPPERS caused some damage in the Nazaret and Ambo area on teff. These infestations caused more concern than in normal years due to the severe nutgrass armyworm losses. No DESERT LOCUST (Shistocerca gregaria) swarms were found in southern or central Ethiopia in 1963, although a number of swarms were reported. A SPITTLEBUG was found on pasture grasses west of Nazaret. A LEAFHOPPER (Tettigoniella cosmopolita) was heavy on grasses in Ginagere. Corn in the Nazaret-Debre Zeit area was lightly infested with a COREID BUG (Cletus sp), a LYGAEID BUG (Lygaeus panduras), CORN LEAF APHID (Rhopalosiphum maidis), MAIZE STALK BORER (Busseola fusca) and an EARWIG (Forficula senegalensis). Sorghum in the Addis Ababa-Sabatta-Nazaret area had light populations of L. panduras, Cletus sp., an undetermined SAWFLY, SOUTHERN GREEN STINK BUG (Nezara viridula) and the PENTATOMIDS (Eurydema ornatum and Agonoscelis sp.).

Coffee Insects: Light infestations of a PENTATOMID (Antestia orbitalis) were observed at Sabatta.

Fruit Insects: VEDALIA (Rodolia cardinalis) was successfully introduced into Ethiopia in 1962. They could not be found last year, but in 1963 they appeared in Alemaya where several thousand were observed. Vedalia is now being introduced in other areas of Ethiopia. Light infestations of a PAPILIONID BUTTERFLY (Papilio demoleus var. demodocus) and a BROWN SCALE INSECT were found on citrus in the Sabatta area. WHITEFLIES were found on figs at Debre Zeit.

Truck Crop Insects: Cabbage was moderately infested with APHIDS and several species of LEPIDOPTERA at Sabatta. Squash at Sabatta was severely damaged by a LEAF BEETLE (Leptaulaca fissicollis).

Miscellaneous Insects: A PIERID BUTTERFLY (Pieris sp.) did a medium amount of defoliating in various gardens in the Addis Ababa area, affecting several varieties of plants. Light to heavy infestations of APHIDS were found on roses in Addis Ababa. A heavy infestation of BAGWORMS occurred on acacia trees in Dira Dawa during September. A PAPILIONID (Papilio sp.) defoliated ornamental citrus in Addis Ababa. The NOCTUIDS ("*Plusia*" *limbirena* and *Chrysodeixis* sp.) were common in gardens. Several flights of a TERMITE (*Macrotermes natalensis*) were observed in the Addis Ababa area. Numbers of a SYRPHID FLY (*Eristalis* sp.) were found at the Emperor's horse barn. A COCCID (*Lepidosaphes* sp.) was common on trees in Addis Ababa. COTTONY-CUSHION SCALE (*Icerya purchasi*) was heavy on a variety of trees at Alemaya.

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Issued by

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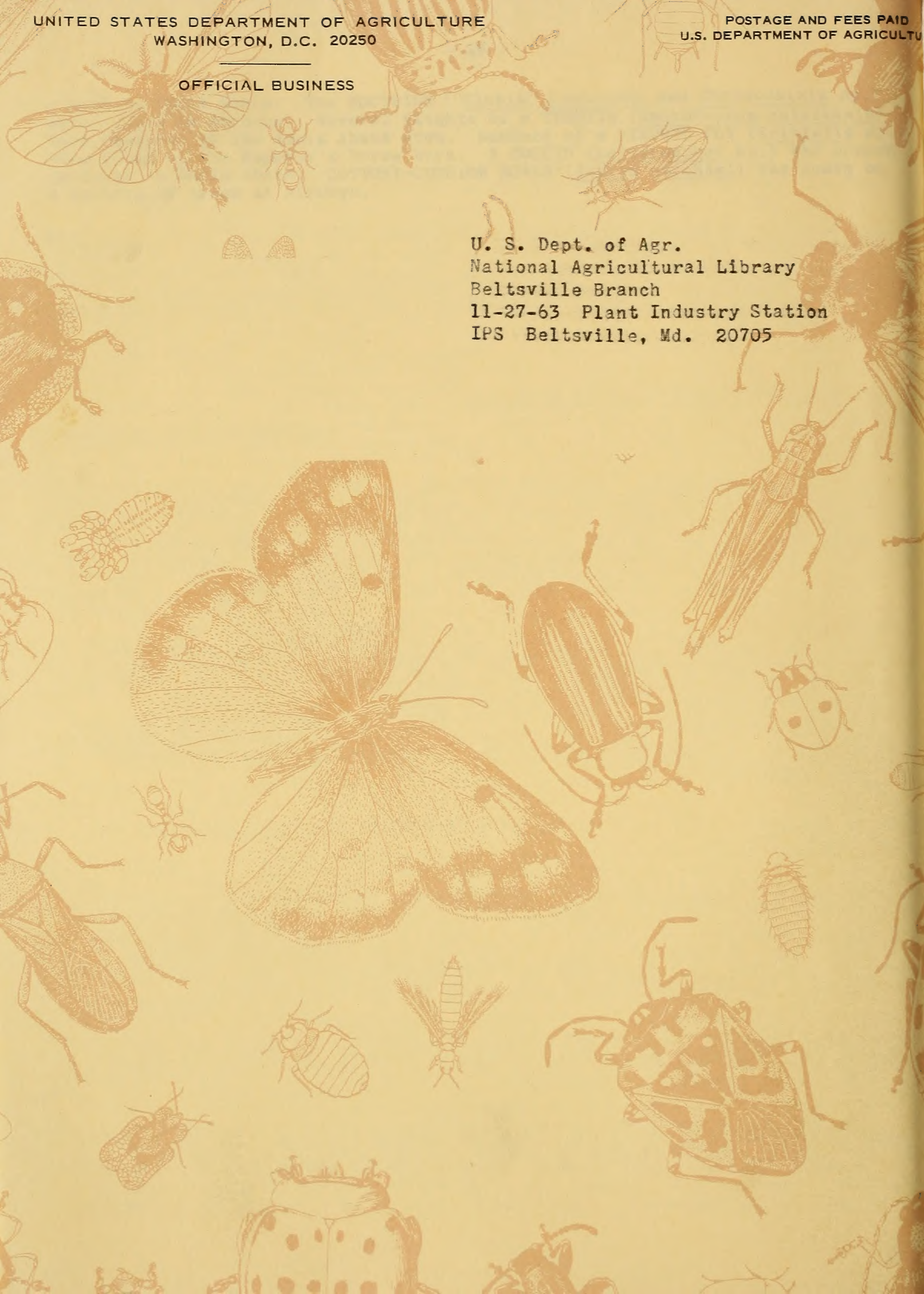

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